TITLE: THE USE OF MULTIVARIATE GRAPHICAL METHODS TO EXPLORE
         DIFFERENCES AMONG THE THIRD SET OF NCI CIGARETTES

AUTHOR: M. R. Binns*

AFFILIATION: Engineering and Statistical Research Institute,
               Ottawa, Ontario K1A 0C6, Canada

ABSTRACT: Many variables were measured on the third set of NCI experimental cigarettes. In the report, the relationships among them were summarized mainly by correlation coefficients within the four categories: condensate, physical, smoke and tobacco variables. However, it is known that when data are not randomly chosen but represent specially selected treatments, simple correlations can be misleading (e.g., Lynch, et al. in the 1977 NCI report). The NCI data were reanalyzed within each of the four categories using multivariate methods as graphical tools to compare cigarettes in terms of all measurement.

REVIEW: Dr. Binns presented two graphical tools as an aid to multivariate analysis, using the third set of NCI cigarettes as an example. The first of these three he termed Principal Component Analysis. This is the same approach used here at PM as Factor Analysis. The second method is purely graphical. All data are normalized with respect to a standard sample, and confidence limits are determined. The standard value is then portrayed as a solid line circle, with radius 1, and the confidence limits are shown on dotted line circles with radii smaller or larger than 1. The dependent variable is shown at the 0 degree position, and independent variables are shown at various other locations. This allows one to tell at a glance those variables which fall outside the confidence limits. He presented several of these plots and provided a hand-out showing several more. While his method added nothing to the interpretation of the data chosen, the graphical approach presented is an interesting and potentially useful technique.

-Reviewed by R. Carpenter